

Remarks/Arguments

Claims 1-39 are pending in this Application. Claims 1-31 and 37-39 have been withdrawn. In the Office Action mailed October 5 2006, the Examiner rejected Claims 32-36 under 35 U.S.C. §112, second paragraph, as being indefinite and under 35 U.S.C. §102(b) as being anticipated by Kirk et al. (US Patent No. 6,419,742); and provisionally rejected Claims 32-36 for nonstatutory obviousness-type double patenting.

Claims Rejections - 35 U.S.C. § 112, second paragraph

In paragraph 3 of the Office Action, the Examiner rejected Claims 32-36 as being indefinite. Applicants respectfully submit amended Claim 32, amended to particularly point out and distinctly claim subject matter regarded as the invention. Applicants have amended Claim 32 to clarify the Examiner's question regarding valence mending and have amended the claim to make clear that valence mending is not a future intended use. Support for the amendment may be found throughout the specification, at, e.g., paragraphs [0028], [0029] and [0031]-[0036]. No new matter has been introduced with this amendment. Withdrawal of the rejection under 35 U.S.C. §112, second paragraph is respectfully requested as well as entry and allowance of the amended claim as provided in the Listing of Claims beginning on page 2 of this paper.

Claims Rejections - 35 U.S.C. § 102(b)

In paragraph 5 of the Office Action, the Examiner rejected Claims 32-36 as being anticipated by Kirk et al. (herein "Kirk"). The Examiner states,

"Kirk discloses a semiconductor surface (silicon) comprising an atomic layer of arsenic formed therein, wherein the arsenic layer serves to passivate the silicon substrate (Col. 5, lines 3-15, for instance). Regarding the limitation recited in Claim 32 that "valence mending occurs after introducing the semiconductor surface to a passivating agent," to the extent that this language refers to intended use, it is not entitled patentable weight. The article of Kirk prevents reaction of the substrate with, for instance, sulfur, which meets the limitation of claim 33."

Applicants respectfully disagree with the Examiner's statement for several reasons as pointed out in their previous reply. Applicants have also amended Claim 32 to include "a semiconductor surface with one atomic layer of valence-mending atoms and a second molecular species, wherein the valence-mending atoms comprise atoms that create a second surface on the one atomic layer and in contact with the second molecular species, the second surface without dangling bonds and free of interfacial reactants." [Emphasis showing amended text.] Applicants

further reiterate that Kirk et al. do not provide one atomic layer of valence-mending atoms, do not provide a second surface without dangling bonds and do not provide a surface free of interfacial reactants. One of ordinary skill in the art understands that arsenic does not create a surface free of dangling bonds. In fact, new dangling bonds are created on the surface of a layer of arsenic. Kirk also teaches that a reactant, such as sulfur, does occur after their passivation with arsenic, germanium or calcium fluoride. Thus, Kirk teaches that they must provide more than one monolayer to reduce or eliminate sulfur. With Kirk, to prevent sulfur from reacting with silicon, “a monolayer of zinc is first deposited on the arsenic passivation layer before exposing the substrate to sulfur.” Thus, it is at least a second layer of zinc that prevents “deleterious reactions between sulfur and silicon” (Col. 5, ll. 5-12) or a “number of monolayers of germanium” (Col. 5, l. 36) and “more than one atomic layer of CaF_2 ” (Col. 5, ll 65) that are required to prevent sulfur from forming. Therefore, Kirk always requires more than one monolayer for its passivation, as taught throughout the specification and claims (see Claim 1 requiring “a passivation layer having a thickness in excess of one monolayer”). As such, Kirk does not teach each and every aspect of Claim 32 and cannot anticipate the claim. Applicants respectfully request the rejection under 35 U.S.C. §102(b) be removed and requests entry and allowance of the claim and its dependents.

Applicants have also amended Claims 33 and 35 as to matters of form or to include subject matter regarded as the invention. No new matter has been introduced with these amendments. new Claims 40-43 are requested to be entered, such claims including subject matter regarded as the invention. Support for new Claims 40-43 may found throughout the specification and in the originally filed claims. Applicants respectfully request entry and allowance of amended Claims 33 and 35 and new Claims 40-43.

Double Patenting

On page 3 of the Office Action, the Examiner provisionally rejected Claims 32-36 for nonstatutory obviousness-type double patenting as being unpatentable over Claims 28-31 of copending Application No. 10/822,345 (herein “344 publication”). Applicants respectfully point out that when two or more co-pending applications are filed on the same day, the Examiner is “to determine which application claims the base invention and which application claims the improvement” (see MPEP 804). Upon such a determination, the rejection in the base application is withdrawn (thereby removing the requirement for filing a terminal disclaimer), and the rejection may then be filed in the application claiming the improvement. Accordingly, Applicants respectfully

request the Examiner point out such distinctions in order for Applicants to appropriately respond to the rejection of nonstatutory obviousness-type double patenting.

Conclusion

In light of the amendments, remarks and arguments presented with this Amendment, Applicants respectfully submit that the claims as provided in the Listing of Claims beginning on page 3 of this paper are in condition for allowance. Accordingly, favorable consideration for and allowance of such claims are respectfully requested.

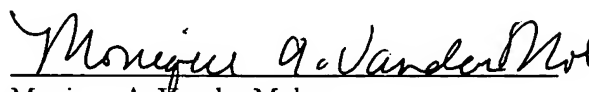
A Request for Continued Examination is filed concurrently with this paper and with the appropriate fees along with a petition and appropriate fees for a one-month extension of time. No additional fees are believed due with this Amendment. If this is incorrect, the Commissioner is authorized to charge those additional fees, other than the issue fee, that may be required by this paper to Deposit Account No. 07-0153.

Should the Examiner have any questions or comments, or if further clarification is required, it is requested that the Examiner contact the undersigned at the telephone number listed below.

Dated: February 5, 2007

Respectfully submitted,

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